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Hydroterapy in Influencing The Changes of Elderly Blood Pressure

Nutrisia Nu'im Haiya[1], Iwan Ardian[2], Iskim Luthfa[3]
Sultan Agung Islamic University, Department of Community Nursing
Jl. Raya Kaligawe Km.04, Semarang, Jawa Tengah, Indonesia
haiya@unissula.ac.id; iwanardian@unissula.ac.id;
iskimluthfa@unissula.ac.id

Abstract - Introduction: Hypertension is a disease mostly experienced by the elderly. To relive the high blood pressure, most patients consume chemical drugs. If it is done in a long period, it will cause some side effect. Hydrotherapy is a method to reduce blood pressure by soaking the feet with warm water and salt. This method is considered to be able to increase vessel circulation and reduce blood pressure. Research method, This Research uses Quesi experiment without control group design. 31 respondents as the research sample were taken purposively. The respondents were given the mixture of soaking warm water and salt for 5 times in 5 weeks. Data analysis is done by the Wilcoxon test. The results of the study, statistically based on the results of the Wilcoxon test showed that *p* value 0.002 is smaller than 0.05. Conclusion, hydrotherapy gives impact on blood pressure reduction in the elderly in Bangetayu Wetan.

Key words*: Hidrotheraphi, blood pressure, elderly*

1. Introduction

Hypertension is a condition where there is an increase of blood pressure which provides sustained symptoms in the body causing to more severe damages (Brownson, Patrick & James, 2007).

The data on WHO in 2013 stated that there were around 17 million deaths every year caused by cardiovascular disease. 9.4 million deaths in the world were caused by complications from hypertension, about 45% of deaths was caused by heart disease and 51% of deaths was caused stroke. Hypertension prevalence in Indonesia is 26.5%, and in Central Java is 26.4% (Basic Health Research, 2013). Whereas the prevalence of hypertension in Demak reached 13,865 in 2013 and increase into 41,942 (8.11%) in 2014 (MOH, 2014).

Nationally, the prevalence of hypertension in Indonesia is quite high, it is reaching 7.2%. In Gorontalo province. The prevalence of hypertension has exceeded the national rate, it is 9.1%. Healthy people 2010 for Hypertension recommends the need for a comprehensive and intensive approach to meet the needs of controlling blood pressure optimally (Basic Health Research, 2007).

Hydrotherapy is a method that can reduce blood pressure if it is used regularly. The hydrotherapy is done by soaking the feet with warm water and salt naturally and physiologically, the warm water brings impact to the body especially the blood vessels that will accelerate blood circulation and loading factors in the water will strengthen the muscles and ligaments that strengthen the joints of the body (Lalage , 2015).

Soaking feet with warm water and salt is useful for vasodilatation of blood flow so as to reduce blood pressure (Umah, 20114). Damayanti (2014) in her study stated that there were significant changes before and after hydrotherapy in

the elderly in Kebondalem with p-value o 0.00 about the decrease in blood pressure in the elderly.

2. Research Methodology

This research is a quantitative research with Quesi method without experiment control group design. It is using wilcoxon test, with 31 respondents as the sample. The pretest was done with a blood pressure check. The respondent was given hydrotherapy for 15-30 minutes, 5 times in five weeks.

3. Result and Discussion

The research was done in the Bangetayu Semarang with the elderly in the village as the population. In table 1, there were 31 respondents given hydrotherapy, 17 people (54.8%) are 60-74 years old while the gender are balance between man and woman.

Table 1. The Respondent Characteristics Frequency Distribution.

No	Variable	Elderly in the Family	
		F	(%)
1.	Age		
	a. 60-74	17	54,8
	b. 75-90	12	38,7
	c. > 90	2	6,45
2.	Gender		
	a. Man	17	51,5
	b. Woman	16	48,5

The Respondents' blood pressure at pre-intervention are mostly in grade 2, there are 14 people (42, 4%). On the other hand, after post-intervention, most respondents are at grade 1, there are 16 people (48, 5%). Statistically based on the Wilcoxon test, It shows that the *p* value 0.002 is lower than 0, 05, which shows that there is impact of hydrotherapy in decreasing blood pressure, as seen in table 2:

Table 2. The Result of Pre and Post Wilcoxon Test Hydrotheraphy Intervention.

No	Blood pressure Variable	Pre Intervention		Post Intervention		*P value*
		F	(%)	F	(%)	
1.	Pre HT	6	18,2	11	33,3	0,002
2.	HT Gr. 1	13	39,4	16	48,5	
3.	HT Gr. 2	14	42,4	6	18,2	

Age and gender are the resistance factors for hypertension that cannot be controlled. The results showed that 17 (54.8%) respondents were in the range of 60-74 years old, whereas, the gender was seen balance between men and women.

Growing old may cause someone to have higher risk of hypertension. The prevalence of hypertension at the age of 60 is reaching 40% and the death risk caused by hypertension is reaching 50%. With the growing age, the blood vessel is losing its flexibility and elasticity causing the increasing of blood pressure. (Hanns Peter, 2009). Medically, it is explained that the older a person the higher

disturbance in calcium metabolic setting, with the result that there are many calcium circulated in the blood. A lot of calcium in the blood (bypercalcidemia) causes the blood getting more dense, so blood pressure increasing. Calcium deposits in the arteriosclerosis cause narrowing the blood vessels. As a result, blood flow is disrupted. It can stimulate an increase in blood pressure. Increasing age also causes decreasing arterial elasticity. Arteries cannot be flexible and tend to be stiff, so the volume of blood flowing is faltered. In order to meet the need of blood in the tissues, the heart must pump blood more strongly. This situation is getting worse by the arteriosclerosis, the blood pressure is increasing (Muhammadun, 2010).

Ana (2010) stated that women are prone to suffer hypertension because the average woman's body weight is greater than men, besides women also have less physical activity than men.

Prevalence of hypertension in women will increase after menopause. Because before menopause, levels of High Density Lipoproten (HDL) and estrogen will protect women. High levels of HDL prevent and protect the atherosclerosis process. Women who experience menopause will loss estrogen that protects the blood vessels and their damage. Continuously, estrogen will change naturally at the age of 45-55 years (Anggeraini, 2009).

Based on table 4.2, it is known that respondents' blood pressure at pre-intervention were in the grade 2, there were 14 people (42.4%), while after post intervention most respondents were in the grade 1, there were 16 people (48.5%). Statistically based on the Wilcoxon test, the *p* value 0.002 is less than 0.05. It shows that there is significant change of blood pressure before and after the hydrotherapy intervention.

The results of this study are supported by research conducted by Damayanti, et al. (2014) which stated that the differences in blood pressure before and after hydrotherapy in hypertensive patients in Kebondalem, Jambu, Semarang showed a significant difference before and after hydrotherapy in hypertensive patients n in Kebondalem with a *p*-value 0.00.

According to WHO, the blood pressure limit which is still considered normal is less than 130/85 mmHg. If it is more than 140/90 mmHg, it is stated as hypertension and called as high-normal. The limit is intended for adult, over 18 years old.

In this research, it is found that blood pressure decreased. The decreases of respondents' blood pressure are both slightly and excessively. This is because each individual has a different body response to hydrotherapy done by soaking feet therapy using warm water with a salt. It is supported by the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC) which said that systolic blood pressure 140-159 and diastolic 90-99 mmHg were consider as mild hypertension.

Hydrotherapy proves reducing the blood pressure. Smeltzer & Bare (2013) stated that hydrotherapy / soaking the feet with warm water and salt helps to dim muscle spasm. Superficial heat can be added to a bath or shower with warm water and warm compresses. The maximum benefit from hydrotherapy will be seen in 20 minutes after doing the therapy.

There are the benefits of hydrotherapy. One of them is that it can reduce pain by stimulating the production of endorphins, nerves chemical with analgesic (Herminia de Guzman-Ladion, 2010). The analgesic on the body can remove waste material, absorb nutrients and O_2 because most of the body cells do not

directly contact with the external environment, but this cell must do the exchange with environment, from low heart in digestion (to digesting the liquid) to the kidney (to adjust nutrient composition, water and to remove waste material) and to skin (to remove heat) (Sherwood & Lauralee (2001).

4. Conclusion

Hydrotherapy can reduce blood pressure in the elderly. Hydrotherapy can be used in blood pressure in reduction therapy in the elderly with hypertension that can be done for prevention daily at home, curative and rehabilitative treatments. It is recommended for further research to analyze the case with more intensive hydrotherapy.

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